



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/782,149	02/14/2001	Yung-Seop Lee	3225-119	8329

26890 7590 07/12/2005

JAMES M. STOVER
NCR CORPORATION
1700 SOUTH PATTERSON BLVD, WHQ4
DAYTON, OH 45479

EXAMINER

CHOI, PETER H

ART UNIT	PAPER NUMBER
----------	--------------

3623

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/782,149

Applicant(s)

LEE, YUNG-SEOP

Examiner

Peter Choi

Art Unit

3623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This **Final** Office Action is responsive to Applicant's amendment filed April 13, 2005. Currently, claims 1-13 are pending.

Response to Arguments

2. Applicant's arguments filed on April 13, 2005 have been fully considered but they are not persuasive.

It is noted that the applicant did not challenge the statements of principles that are old and well known in the art as cited in the First Office Action. Therefore, those statements are presented herein after as prior art. Specifically, it has been established that it was old and well known in the art at the time of invention to:

- Vary the number of divisions that a plurality of records should be broken into (quintiles vs. quartiles) to ensure statistical validity
- Use spreadsheets to sort records and group records together with other records sharing similar attribute values
- Sort data can as many times as needed, by attribute value.
- Sort records within the same grouping using spreadsheets.
- Obtain records of airline passengers, including flight history and revenue generated.

Art Unit: 3623

- Vary the number of groups used to sort records. (125 vs. 100).
- Evaluate performances on a 1 – 100 scale.

Applicant argues that Reference A does not show or suggest that discretized attribute scores are assigned before sorting a plurality of records. The Examiner respectfully disagrees. As claimed, the claimed invention assigns a discrete attribute score to attribute values. The attribute score is assigned independently of the customer's individual attribute value, as the attribute score is not assigned to the customer.

Reference A teaches that for each attribute, it is predetermined that the top 20% (0-20%) of attribute values are assigned a score of "5". The next 20% (21-40%) is given a score of "4" and so on (41-60% → 3, 61-80% → 2, 81%+ → 1) [see Paragraph 4]. This scoring method is applied to the customer records (after they have been sorted according to attribute value) to assign each customer an attribute score.

Therefore, the Examiner submits that Reference A does indeed assign a discrete attribute score to attribute values prior to sorting records. Furthermore, as currently claimed, it is unclear as to whether steps (a) through (e) are sequential and performed in order. As claimed, the method employs the step of assigning scores two different times, and the step of sorting a plurality of records three different times. As written, it

Art Unit: 3623

has been interpreted that assigning step (a) occurs before assigning step (e), and that sorting step (b) occurs before sorting steps (c) and (d).

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Arthur Hughes' "Quick Profits with RFM Analysis" (wherein referred to as Reference A).

As per claim 1, reference A teaches a computer implemented (on a spreadsheet) [Paragraph 13] method of evaluating a plurality of records, each record having at least a first attribute and a second attribute, each of the first attribute and the second attribute having an associated attribute value, the method comprising:

(a) first assigning a discretized attribute score (code of 1,2,3,4, or 5) for each of the attribute values [Paragraph 4];

(b) first sorting the plurality of records in to an order (by most recent to most ancient) based on the assigned discretized attribute scores associated with the first attribute (recency) [Paragraph 4];

Art Unit: 3623

(c) second sorting the plurality of records in to an order (by most frequent to least frequent) based on the assigned discretized attribute scores associated with the second attribute (frequency) [Paragraph 6];

(d) third sorting the plurality of records in to an order based on the attribute values associated with at least the first attribute and the second attribute, until records, which have different attribute values associated with at least the first attribute or the second attribute, have been sorted to different ranks (RFM cells) [Paragraph 10]; and

(e) second assigning an evaluation score (RFM cell code) to each record which has been sorted [Paragraph 10].

As per claim 2, Reference A teaches the method of claim 1, wherein step (a) includes the steps of:

(i) breaking the plurality of records into a number of groups (quintiles) based on the attribute values (recency, frequency, and monetary) [Paragraphs 4,6, and 8]; and

(ii) for records of each group, assigning a discretized attribute score (code of 5,4,3,2, or 1) for the attribute values [Paragraph 4,6, and 8].

As per claim 3, Reference A teaches the method of claim 2, further including the step of sorting the plurality of records in the order based on the attribute values associated with one of at least the first attribute (recency) and the second attribute (frequency) [Paragraphs 4 and 6].

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 4 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reference A.

As per claim 4, Reference A fails to teach that the records should be broken into quartiles or that records of each quartile are assigned one of the scores of 1,2,3 and 4 for the attribute values associated with the one of at least the first attribute and the second attribute. However, Reference A teaches a method of breaking a plurality of records into quintiles instead of quartiles. For records of each quintile, one of the scores 1,2,3,4, and 5 are assigned for the attribute values associated with the one of at least the first attribute and the second attribute.

Reference A reinforces a well known concept in the art that the number of cells needed is a design choice that varies depending on the size of the database and the business' needs. Reference A also teaches that you want to have as many cells as possible so that you can more accurately predict customer response, but that having too

Art Unit: 3623

many cells may result in each test cell failing to have enough data to be statistically valid. [Paragraph 22] An airline may change the number of cells into which the records are divided, depending on the number of customer records available, and to ensure that each cell is statistically valid. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Reference A to divide the records into quartiles instead of quintiles for the reasons discussed therein above.

As per claim 7, Reference A fails to explicitly disclose the process of reiteratively performing step (d) of Claim 1 until records, which have the same assigned discretized attribute scores but different attribute values associated with at least the first attribute or the second attribute, have been sorted to different ranks. However, Reference A teaches that a spreadsheet can be used to sort records into different RFM cells and group them together with other records sharing the same two digit cell code (meaning they have attribute values in the same quintile). [Paragraphs 10 and 13]

The spreadsheet (embodied on a computer as software programs such as Microsoft Excel or Lotus 1-2-3) used to conduct the RFM analysis can also be used to sort records within the same RFM cell grouping. The spreadsheet software would perform step (d) once to sort records into RFM cell groupings, and once again within each RFM cell grouping to rank individual records by attribute value, if needed. The concept of sorting data by a certain attribute is old and well known in the art. It is old and well known in the art that computer spreadsheets can sort records according to any

Art Unit: 3623

attribute by which the record is defined. Sorting the plurality of records would allow an airline to quickly reference, access, and retrieve data. Sorting customers into and within RFM cell groups may enable airlines to identify and prioritize key customers (for retention, targeted marketing promotions, etc). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Reference A to include sorting for the reasons discussed therein above.

As per claim 8, Reference A fails to explicitly disclose the process of reiteratively performing step (d) of Claim 1 until records, which have the same assigned discretized attribute scores but different attribute values associated with at least the first attribute or the second attribute, have been sorted to different ranks based on the value of the first attribute. However, Reference A teaches that a spreadsheet can be used to sort records into different RFM cells and group them together with other records sharing the same two digit cell code (meaning they have attribute values in the same quintile).

[Paragraphs 10 and 13]

The spreadsheet (embodied on a computer as software programs such as Microsoft Excel or Lotus 1-2-3) used to conduct the RFM analysis can also be used to sort records within the same RFM cell grouping. The spreadsheet software would perform step (d) once to sort records into RFM cell groupings, and once again within each RFM cell grouping to rank individual records by attribute value, if needed. The concept of sorting data by a certain attribute is old and well known in the art. It is old

Art Unit: 3623

and well known in the art that computer spreadsheets can sort records according to any attribute by which the record is defined. Sorting the plurality of records would allow an airline to quickly reference, access, and retrieve data. Sorting customers into and within RFM cell groups may enable airlines to identify and prioritize key customers (for retention, targeted marketing promotions, etc). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Reference A to include sorting for the reasons discussed therein above.

As per claim 9, Reference A fails to explicitly disclose the process of reiteratively performing step (d) of Claim 1 until records, which have same assigned discretized attribute scores but different attribute values associated with the first attribute or the second attribute, have been sorted to different ranks based on the value of the second attribute. However, Reference A teaches that a spreadsheet can be used to sort records into different RFM cells and group them together with other records sharing the same two digit cell code (meaning they have attribute values in the same quintile).

[Paragraphs 10 and 13]

The spreadsheet (embodied on a computer as software programs such as Microsoft Excel or Lotus 1-2-3) used to conduct the RFM analysis can also be used to sort records within the same RFM cell grouping. The spreadsheet software would perform step (d) once to sort records into RFM cell groupings, and once again within each RFM cell grouping to rank individual records by attribute value, if needed. The

Art Unit: 3623

concept of sorting data by a certain attribute is old and well known in the art. It is old and well known in the art that computer spreadsheets can sort records according to any attribute by which the record is defined. Sorting the plurality of records would allow an airline to quickly reference, access, and retrieve data. Sorting customers into and within RFM cell groups may enable airlines to identify and prioritize key customers (for retention, targeted marketing promotions, etc). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Reference A to include sorting for the reasons discussed therein above.

As per claim 10, Reference A teaches a computer implemented method of evaluating customers in the airline industry in a given period, the method comprising:

- (b) first assigning a discretized score (code of 1,2,3,4 or 5) for each of the associated values [Paragraph 4];
- (c) first sorting the records in order based on the assigned discretized scores associated with the net revenue (monetary value) [Paragraph 8];
- (d) second sorting the records in order based on the assigned discretized scores associated with the number of flights (frequency) [Paragraph 6];
- (e) third sorting the records in order based on the associated values associated with at least the net revenue and the number of flights, until records, which have different associated values associated with at least the net revenue or the number of flights, have been sorted to different ranks (RFM cells) [Paragraph 10]; and

Art Unit: 3623

(f) second assigning an evaluation score (RFM cell code) to each record which has been sorted [Paragraph 10].

Regarding claim 10(a), it is old and well known in the art that airlines keep extensive records of passengers, including a flight history (how often the customer flies, the number of flights flown, and the destination and point of origin for each flight segment) and the revenue generated. It is old and well known in the art that data analysis cannot be conducted until pertinent information has been obtained. This information could be found on an existing computer database maintained by the airline that could easily be accessed by a computer performing the analysis (imported as a data file, through a file transfer protocol, the Internet, etc). This would eliminate the need to re-enter data into a new database, or to copy data from one format to another (spreadsheet to database, database to spreadsheet, etc). Accessing a computer file to obtain customer information would eliminate these unnecessary steps. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Reference A to include a means of obtaining customer records to enable an analysis to be performed for the reasons discussed therein above.

4. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reference A as applied to claim 1 above, and further in view of Powers et al. (U.S. Patent #US 6,604,084B1).

As per claim 5, Reference A teaches the method of claim 1, wherein step (e) includes the steps of:

(i) splitting the records, which have been sorted, into a number of groups (RFM cells) [Paragraph 10];

Regarding Claim 5(ii), Reference A fails to explicitly disclose an assigned evaluation score to records of each group. However, Powers et al. teaches a performance evaluation system where a quality score is calculated for performance areas. [Column 11, line 63 – Column 12, line 20] Quality scores may be weighted based on importance [Column 12, line 66 – Column 13, line 24] and would provide another means of comparing customers and identifying key customers. The quality score could also be used to evaluate and compare individual records and RFM cells. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Reference A to include a means for calculating a quality score for records for the reasons discussed therein above.

As per claim 6, Reference A fails to teach a method where the records are sorted into 100 groups, where an evaluation score of between 1 and 100 are assigned for records of each group. However, Reference A discloses a method where the records are sorted into 125 groups (RFM cells). [Paragraph 10]

It is old and well known in the art that the number of groups used to sort records is subjective, depending on the size of the airline's customer database and their desired level of analysis. This is similar to the number of cells used to divide a plurality of records (as discussed earlier) and is merely a design choice of the individual airline conducting the analysis.

Regarding Claim 6(ii), Reference A fails to explicitly disclose an assigned evaluation score of between 1 and 100 for records of each group. Powers et al. teaches a performance evaluation system where a quality score is calculated, but is silent regarding the range of quality scores. This performance evaluation system could be used to evaluate and compare individual records and RFM cells. Although the evaluation score range is arbitrary, it is old and well known in the art that evaluations and performance ratings are commonly made on a 1 to 100 scale. A quality score of records or RFM cells would provide another means of comparing customers and identifying key customers. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Reference A to include a means for calculating a quality score for records as taught by Powers et al. for the reasons discussed therein above.

5. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reference A, and further in view of the Database Marketing Institute's RFM for Windows® (herein referred to as Reference B).

As per claim 11, Reference A teaches a method for evaluating a plurality of records, each record having at least a first attribute and a second attribute, each of the first attribute and the second attribute having an associated attribute value, the computer architecture comprising:

(a) first assigning a discretized attribute score (code of 1,2,3,4 or 5) for each of the associated attribute values; [Paragraph 4]

(b) first sorting the plurality of records in order (from most recent to most ancient) based on the assigned discretized attribute scores associated with the first attribute (recency); [Paragraph 4]

(c) second sorting the plurality of records in order (by most to least frequent) based on the assigned discretized attribute scores associated with the second attribute (frequency); [Paragraph 6]

(d) sorting the plurality of records in order based on the attribute values associated with at least the first attribute and the second attribute, until records, which have different attribute values associated with at least the first attribute or the second attribute, have been sorted to different ranks (RFM cells); [Paragraph 10] and

(e) second assigning an evaluation score (RFM cell code) to each record which has been sorted. [Paragraph 10]

Regarding claim 11, Reference A is silent regarding a computer architecture for evaluating the plurality of records. However, Reference B teaches a software, RFM for

Art Unit: 3623

Windows® that performs the RFM analysis taught by Reference A. RFM for Windows® has codified means for performing the tasks required of an RFM analysis and therefore meets the limitation of this claim. Since it could automatically receive data from a file and perform an RFM analysis, use of this software would eliminate the need to manually process the records through a spreadsheet, and would automate the process of sorting records (both into and within RFM cells). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Reference A to incorporate the software of Reference B to automate the process of conducting an RFM analysis.

As per claim 12, Reference A teaches a method for:

first assigning a discretized attribute score (code of 1,2,3,4 or 5) for each of the attribute values; [Paragraph 4]

first sorting the plurality of records in order (from most recent to most ancient) based on the assigned discretized attribute scores associated with the first attribute (recency); [Paragraph 4]

second sorting the plurality of records in order (from most frequent to least frequent) based on the assigned discretized attribute scores associated with the second attribute (frequency); [Paragraph 6]

third sorting the plurality of records in order based on the attribute values associated with at least the first attribute and the second attribute, until records, which

Art Unit: 3623

have different attribute values associated with at least the first attribute or the second attribute, have been sorted to different ranks (RFM cells); [Paragraph 10] and

second assigning an evaluation score (RFM cell code) to each record which has been sorted [Paragraph 10].

Regarding claim 12, Reference A is silent regarding a computer system for evaluating the plurality of records. However, Reference B teaches a software, RFM for Windows® that performs the RFM analysis taught by Reference A. RFM for Windows® has codified means for performing the tasks required of an RFM analysis. RFM for Windows® discloses minimum hardware requirements for using the software. RFM for Windows® requires a computer system comprising of:

a (80386) processor; [Paragraph 20] and

a (8 mb RAM) memory coupled to the processor, the memory having stored therein sequences of instructions (software) [Paragraph 20], which, when executed by the processor, cause the processor to perform the steps of an RFM analysis as disclosed by Reference A.

RFM for Windows® has codified means for performing the tasks required of an RFM analysis and specifies the minimum hardware requirements for a computer system running the software, and therefore meets the limitation of this claim. Since it could automatically receive data from a file and perform an RFM analysis, use of this software would eliminate the need to manually process the records through a spreadsheet, and

Art Unit: 3623

would automate the process of sorting records (both into and within RFM cells).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Reference A to incorporate the software of Reference B to automate the process of conducting an RFM analysis.

As per claim 13, Reference A teaches a method for:

first assigning a discretized attribute score (code of 1,2,3,4, or 5) for each of the attribute values [Paragraph 4];

first sorting the plurality of records in order (from most frequent to most ancient) based on the assigned discretized attribute scores associated with the first attribute (recency); [Paragraph 4]

second sorting the plurality of records in order (from most frequent to least frequent) based on the assigned discretized attribute scores associated with the second attribute (frequency); [Paragraph 6]

third sorting the plurality of records in order based on the attribute values associated with at least the first attribute and the second attribute, until records, which have different attribute values associated with at least the first attribute or the second attribute, have been sorted to different ranks (RFM cells); [Paragraph 10] and

second assigning an evaluation score (RFM cell code) to each record which has been sorted. [Paragraph 10]

Regarding claim 13, Reference A is silent regarding an article for use in evaluating a plurality of records, each record having at least a first attribute and a second attribute, each of the first attribute and the second attribute having an associated attribute value. However, Reference B teaches a sequence of machine readable instructions in machine readable form (software), RFM for Windows®, wherein execution of the instructions by one or more processors causes the one or more processors to perform the steps of an RFM analysis as taught by Reference A.

RFM for Windows® has codified means for performing the tasks required of an RFM analysis into a software program available to the public and therefore meets the limitation of this claim. Since it could automatically receive data from a file and perform an RFM analysis, use of this software would eliminate the need to manually process the records through a spreadsheet, and would automate the process of sorting records (both into and within RFM cells). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Reference A to incorporate the software of Reference B to automate the process of conducting an RFM analysis.

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Choi whose telephone number is (571) 272 6971. The examiner can normally be reached on M-F 8-5.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 3623

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PC

July 7, 2005


TARIQ R. HAFIZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600